REMARKS

I. Introduction

In response to the pending Office Action, Applicants have cancelled claim 21 as it was subject to a restriction requirement and was not elected for prosecution, and amended claims 1, 8 and 15 so as to further clarify the intended subject matter of the present invention. No new matter has been added. For the reasons set forth below, it is respectfully submitted that all pending claims are now in condition for allowance.

II. The Rejection Of The Claims Under 35 U.S.C. § 102

Claims 1-20 were rejected under 35 U.S.C. § 102 as being anticipated by USP No. 6,077,310 to Yamamoto. Applicants respectfully submit that, as amended, claims 1-20 are patentable over Yamamoto for at least the following reasons.

As recited by the amended claims, the present invention relates to a systematic method of automatically applying optical proximity correction (OPC) techniques to a reticle design, so as to eliminate the need for an extensive trial and error process to determine the appropriate OPC to be utilized, as well as eliminate the need for an experienced mask designer to be involved in the OPC design process. In other words, the present invention allows for a simple and automatic application of OPC techniques for any given target reticle design. More specifically, the process includes the steps of: (1) generating a first set of rules for applying scatter bar assist features to the plurality of features contained in the target reticle, ***where the first set of rules is generated utilizing a simulation process***, and (2) generating a second set of rules for applying biasing to the plurality of features in the target reticle, ***where the second set of rules is generated utilizing a model representing the printing performance of the system***. Importantly, as also recited by

the independent claims, ***both sets of rules are determined utilizing the same illumination settings***. *This process provides for automatic application of optimal optical proximity correction features to the target pattern for the given illumination setting*. Furthermore, as recited by dependent claims (*see*, claims 6, 13 and 20), the placement of the scatter bars within the design is considered when applying the biasing to the design in accordance with the second rule set.

Turning to the cited prior art reference, Yamamoto discloses a method of applying OPC to a target reticle which comprises dividing the reticle into a plurality of areas and then applying a rule based correction to one area and a simulation based correction to a second area, and then recombining the two areas (*see*, col. 4, lines 9-20). More specifically, the critical areas such as the gate layer is corrected utilizing the simulation method and the non-critical areas are corrected utilizing the rule based approach (*see*, col. 4, lines 38-44).

In contrast to the claimed invention, Yamamoto fails to disclose or suggest at least the following elements. First, Yamamoto does not disclose the generation of a set of rules for applying scatter bar assist features to the plurality of features, which is based on a simulation process. Yamamoto simply states that it ***may*** generate a rule for applying an assist feature (*see*, col. 17, lines 45-47). However, this assist feature rule is not determined via a simulation process, it is simply identified as being one of the possible rules in the "rule based" correction table of Yamamoto. Indeed, Yamamoto does not appear to specifically disclose how the rules are generated. Yamamoto also fails to disclose the generation of a set of rules for applying biasing to the plurality of features, where the second set of rules is generated utilizing a model representing the printing performance of the system. As noted above, in accordance with the present invention, a model defining the imaging performance of the imaging system and the resist is determined and utilized to define the rule set for applying biasing to the plurality of

features in the target design. Yamamoto does not appear to disclose how the rules for applying biasing are determined, and clearly does not disclose utilizing a model representing the printing performance of the system to determine the rules. Furthermore, the claimed invention recites that the first set of rules and the second set of rules are determined utilizing the same illumination settings. It does not appear that Yamamoto makes any disclosure suggesting that the biasing rules should be determined utilizing the same illumination settings as utilized in the simulation process. Thus, for at least these reasons, Yamamoto fails to disclose or suggest the invention recited by the independent claims.

It is also noted that Yamamoto makes clear that the biasing rule application and simulation process are performed on distinct and separate parts of the target reticle (i.e., simulation is only performed on critical areas and areas which do not conform to the rules). As such, Yamamoto also fails to disclose the subject matter of dependent claims 6, 13 and 20, which recites that the placement of the scatter bars within the design is considered when applying the biasing to the design in accordance with the second rule set.

As anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference. ***Kalman v. Kimberly-Clark Corp.***, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), for the foregoing reasons, it is clear that Yamamoto does not anticipate amended claims 1, 8 and 15, or any claim dependent thereon.

III. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are

contained in the dependent claims, ***Hartness International Inc. v. Simplimatic Engineering Co.,*** 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1, 8 and 15 are patentable for the reasons set forth above, it is respectfully submitted that dependent claims are also in condition for allowance.

IV. Request For Notice Of Allowance

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

Respectfully submitted,

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